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PTO/SB/21 (08-00)
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| TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i> | Application Number | 09/685,284 | |
| | Filing Date | October 10, 2000 | |
| | First Named Inventor | Lumpkin et al. | |
| | Group Art Unit | 3613 | |
| | Examiner Name | | |
| Total Number of Pages in This Submission | 8 | Attorney Docket Number | AVID.13-2 |

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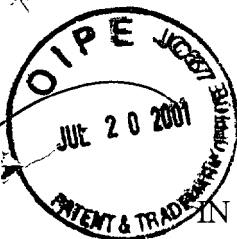
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Attorney Docket: AVID.13-2

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: LUMPKIN *ET AL.*
SERIAL NO.: 09/685,284
FILED: OCTOBER 10, 2000
TITLE: CABLE FEED FOR A MECHANICAL
BALL BEARING DISC BRAKE

EXAMINER:
ART UNIT: 3613
CNFRM NO.:

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PRELIMINARY AMENDMENT

Sir:

Applicant respectfully requests that the above-referenced application be amended as indicated below before consideration of patentability on the merits.

IN THE SPECIFICATION:

On page 12, replace the paragraph beginning at line 16 with the following paragraph:

With reference to Figs. 4A, 12 and 13, the cable feed 42 consists of a mount 284 which is preferably integrally cast with the housing 18. The mount 284 includes an orifice 286 centered along a guide axis 288. A cylindrical housing stop ferrule 290 has a cylindrical main body 292 having an outer diameter dimensioned to fit freely yet snugly within the orifice 286. A minor boot retention barb 294 extends axially from a leading end of the housing stop ferrule. A major boot retention barb 296 extends axially from a trailing end of the housing stop ferrule 290. An annular retention flange 298 extends radially from the main body 292 adjacent to the major boot retention barb 296 and forms a stop which halts axial insertion of the housing stop ferrule 290 into the orifice 286, as best seen in Fig. 12. Further referring to Fig. 12, the inside of the housing

37 CFR 1.8

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Cindy Bennett

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a1
stop ferrule 290 has a trailing portion having an inner diameter slightly larger than that of a standard cable housing to axially receive the cable housing 44 therein. An annular flange 302 extends inwardly to define a cable guide orifice 304. The inner diameter of the minor boot retention barb 306 is of a size between that of the trailing inner diameter 300 and the cable guide orifice 304.

On page 13, replace the paragraph beginning at line 1 with the following paragraph:

a2
A hollow minor retention boot 310 is molded of an elastomeric material and at its trailing edge has an inwardly extending annular flange 312 configured to lockingly engage with the minor boot retention barb 294 of the housing stop ferrule 290. With the housing stop ferrule 290 inserted in the orifice 286 as illustrated in Fig. 12 and the minor retention boot mounted with the inwardly extending annular flange 312 engaging the minor boot retention barb 294, the housing stop ferrule is secured against removal from the orifice 286. The minor retention boot has a leading nipple 314 having a leading hole 316 with an inner diameter slightly less than the outer diameter of the standard bicycle brake cable 40. In this manner, the leading nipple forms a wipe seal with the brake cable 40 as seen in Fig. 12.

On page 13, replace the paragraph beginning at line 10 with the following paragraph:

a3
A hollow major retention boot 320 molded of an elastomeric material has an inwardly extending annular flange 322 sized to lockingly engage with the major boot retention barb 296 on the trailing end of the housing stop ferrule 290 as best viewed Fig. 12. The trailing end 324 has a tapered inner diameter, which at the extreme trailing end is slightly smaller than the outer diameter of the standard cable housing to form a sealing relationship therewith.

On page 14, replace the paragraph beginning at line 13 with the following paragraph:

a4
In the embodiment illustrated in Fig. 1, the conventional cable housing extends from the trailing end of the major retention boot 320. An improvement to this conventional brake setup is to provide a floating cable stop 70 mating with the trailing inner diameter 300 of the housing stop ferrule 290 as illustrated in Fig. 3A. The floating cable stop 70 consists of a axially and radially rigid tube 348 made of a suitable material such as a metal like aluminum or stainless steel or an exceptionally rigid thermoplastic. As used herein, axially and radially rigid means the tube 348

ay
cont

has sufficient rigidity that it will not buckle about its lengthwise axis upon application of tension within the normal range of operating tensions applied to the cable 40 which runs within the tube 348. In the preferred embodiment, the tube 348 has a standard cylindrical cross-section (see Fig. 3C), although other cross-sections may be useful or desired. The outer diameter is preferably essentially the same to that of a standard cable housing 44 so that it can fit into a trailing end of the housing stop ferrule 290 in the same manner as the housing 44 as illustrated in Fig. 12. A connector ferrule 350 connects the tube 348 to a conventional cable housing 44. The conventional cable housing allows the cable to be axially deflected as may be required to attach the cable to a brake lever. A significant advantage of the floating cable stop 70 is that when it replaces conventional cable housings, it provides a straight path for the cable inside with minimal or no contact with the inner diameter of the tube. Over all but the shortest of lengths, the axially flexible cable housing will buckle about the lengthwise axis under application of even minor tension to the cable within and the resultant compression to the cable housing. Elimination of this buckling further reduces contact of the cable with the inner diameter of the tube and serves to further minimize friction on the cable. The floating cable stop can be deployed wherever there is a straight length of cable, independent of fixed housing stops on the bicycle frame. It also provides a protective barrier for the cable, much like conventional cable housing, but at a lesser weight.

On page 15, replace the paragraph beginning at line 8 with the following paragraph:

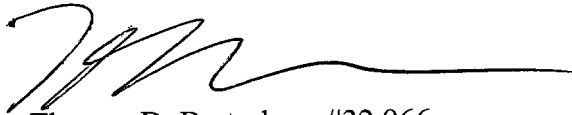
as

In a preferred embodiment illustrated in Fig. 3B, a small length of conventional housing 352 is disposed between the tube 348 and the housing stop ferrule 290 and is joined to the tube 348 by connector ferrule 354. The transition housing 352 is advantageous because it will flex in the event of a lateral blow to the tube 348 and thereby minimize the risk of bending of the tube 348 which would detract somewhat from its performance and could even result in undesired buckling of the tube 348. Preferably, the transition housing 352 is of a length that will not buckle under application of operating tensions to the cable 40 but will still provide sufficient axial flexibility to protect the tube 348. Alternatively, if required, the transition housing 352 could be long enough to bend the cable as required to properly cable to the cable feed. Or, an apparatus such as the ROLLAMAJIG, manufactured to Avid, L.L.C., of Englewood, Colorado, U.S. Patent No. 5,624,334, the disclosure of which is hereby incorporated by reference, could be substituted

as cont for the transition housing to minimize friction where a bend is required to direct the cable.

This constitutes a request for any needed extension of time and an authorization to charge all fees therefore to deposit account No. 19-5117 if not otherwise specifically requested. The undersigned hereby authorizes the charge of any fees created by the filing of this document or any deficiency of fees submitted herewith to be charged to deposit account No. 19-5117.

Respectfully submitted,



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Marked up version showing changes to specification under 37 C.F.R. § 1.121(b)

With reference to Figs. 4A, 12 and 13, the cable feed 42 consists of a mount 284 which is preferably integrally cast with the housing 18. The mount 284 includes an orifice 286 centered along a guide axis 288. A cylindrical housing stop [feral] ferrule 290 has a cylindrical main body 292 having an outer diameter dimensioned to fit freely yet snugly within the orifice 286. A minor boot retention barb 294 extends axially from a leading end of the housing stop [feral] ferrule. A major boot retention barb 296 extends axially from a trailing end of the housing stop [feral] ferrule 290. An annular retention flange 298 extends radially from the main body 292 adjacent to the major boot retention barb 296 and forms a stop which halts axial insertion of the housing stop [feral] ferrule 290 into the orifice 286, as best seen in Fig. 12. Further referring to Fig. 12, the inside of the housing stop [feral] ferrule 290 has a trailing portion having an inner diameter slightly larger than that of a standard cable housing to axially receive the cable housing 44 therein. An annular flange 302 extends inwardly to define a cable guide orifice 304. The inner diameter of the minor boot retention barb 306 is of a size between that of the trailing inner diameter 300 and the cable guide orifice 304.

A hollow minor retention boot 310 is molded of an [elastimeric] elastomeric material and at its trailing edge has an inwardly extending annular flange 312 configured to lockingly engage with the minor boot retention barb 294 of the housing stop [feral] ferrule 290. With the housing stop [feral] ferrule 290 inserted in the orifice 286 as illustrated in Fig. 12 and the minor retention boot mounted with the inwardly extending annular flange 312 engaging the minor boot retention barb 294, the housing stop [feral] ferrule is secured against removal from the orifice 286. The minor retention boot has a leading nipple 314 having a leading hole 316 with an inner diameter slightly less than the outer diameter of the standard bicycle brake cable 40. In this manner, the leading nipple forms a wipe seal with the brake cable 40 as seen in Fig. 12.

A hollow major retention boot 320 molded of an elastomeric material has an inwardly extending annular flange 322 sized to lockingly engage with the major boot retention barb 296 on the trailing end of the housing stop [feral] ferrule 290 as best viewed Fig. 12. The trailing end 324 has a tapered inner diameter, which at the extreme trailing end is slightly smaller than the outer diameter of the standard cable housing to form a sealing relationship therewith.

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In the embodiment illustrated in Fig. 1, the conventional cable housing extends from the trailing end of the major retention boot 320. An improvement to this conventional brake setup is to provide a floating cable stop 70 mating with the trailing inner diameter 300 of the housing stop ferrule 290 as illustrated in Fig. 3A. The floating cable stop 70 consists of a axially and radially rigid tube 348 made of a suitable material such as a metal like aluminum or stainless steel or an exceptionally rigid thermoplastic. As used herein, axially and radially rigid means the tube 348 has sufficient rigidity that it will not buckle about its lengthwise axis upon application of tension within the normal range of operating tensions applied to the cable 40 which runs within the tube 348. In the preferred embodiment, the tube 348 has a standard cylindrical cross-section (see Fig. 3C), although other cross-sections may be useful or desired. The outer diameter is preferably essentially the same to that of a standard cable housing 44 so that it can fit into a trailing end of the housing stop ferrule 290 in the same manner as the housing 44 as illustrated in Fig. 12. A connector [feral] ferrule 350 connects the tube 348 to a conventional cable housing 44. The conventional cable housing allows the cable to be axially deflected as may be required to attach the cable to a brake lever. A significant advantage of the floating cable stop 70 is that when it replaces conventional cable housings, it provides a straight path for the cable inside with minimal or no contact with the inner diameter of the tube. Over all but the shortest of lengths, the axially flexible cable housing will buckle about the lengthwise axis under application of even minor tension to the cable within and the resultant compression to the cable housing. Elimination of this buckling further reduces contact of the cable with the inner diameter of the tube and serves to further minimize friction on the cable. The floating cable stop can be deployed wherever there is a straight length of cable, independent of fixed housing stops on the bicycle frame. It also provides a protective barrier for the cable, much like conventional cable housing, but at a lesser weight.

In a preferred embodiment illustrated in Fig. 3B, a small length of conventional housing 352 is disposed between the tube 348 and the housing stop [feral] ferrule 290 and is joined to the tube 348 by connector [feral] ferrule 354. The transition housing 352 is advantageous because it will flex in the event of a lateral blow to the tube 348 and thereby minimize the risk of bending of the tube 348 which would detract somewhat from its performance and could even result in

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